

## A Comparative Study of Factors Associated with Relapse in Alcohol Dependence and Opioid Dependence

Maithili Kadam, Ankita Sinha, Swateja Nimkar<sup>1</sup>, Yusuf Matcheswalla, Avinash De Sousa<sup>2</sup>

### ABSTRACT

**Background:** Alcohol and opiates are among the most addictive substances posing significant public health problems due to the biopsychosocial impact that they have on individuals. Research shows that majority of abstinent alcohol and/or opioid dependence subjects relapse within 1 year. It has also been estimated that 26–36 million people worldwide abuse opiates, with exceptionally high-relapse rates. The purpose of this study was to compare the sociodemographic factors and correlates relapse in alcohol dependence and opioid dependence. **Methodology:** This research uses a cross-sectional comparative study design with a sample size of 60 drawn from a population of clinically diagnosed patients of alcohol dependence ( $n = 30$ ) or opioid dependence ( $n = 30$ ) and seeking treatment for relapse. In addition to collecting sociodemographic data, other factors such as craving, affect, self-efficacy, and expressed emotions were measured using standardized instruments including brief substance craving scale, Bradburn affect balance scale, drug avoidance and self-efficacy scale and family emotional involvement, and conflict scale. The data were statistically analyzed. **Results:** Disparity in sociodemographic factors was seen in both the groups with opioid group being more likely to be single, unemployed, belonging to lower socioeconomic status, and having a criminal record ( $P = 0.025$ ). Among factors associated with relapse, the opioid group scored significantly higher on craving, perceived criticism ( $P = 0.0001$ ), and lower on self-efficacy ( $P = 0.016$ ). Most common reason cited for relapse in both the groups was desire for positive mood. **Conclusion:** This study highlights the role of social determinants in drug dependence and relapse. Relapse was found to be a complex multifactorial phenomenon. Despite differences in presentation, somewhat similar relapse mechanisms were seen in both groups.

**Key words:** Alcohol dependence, negative affect, opioid dependence, relapse, self- efficacy

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Department of Psychiatry, Grant Government Medical College, J.J. Hospital, <sup>2</sup>Department of Psychiatry, Lokmanya Tilak Municipal Medical College, Mumbai, Maharashtra, India, <sup>1</sup>Department of Health Services, University of Southern Indiana, Evansville, USA

**Address for correspondence:** Dr. Avinash De Sousa  
Carmel, 18, St. Francis Road, Off S.V. Road, Santacruz West, Mumbai - 400 054, Maharashtra, India. E-mail: avinashdes888@gmail.com

## INTRODUCTION

Management of substance use disorders is riddled with multiple relapses. Research studies show that 65–70% of abstinent alcohol-dependence subjects relapse within 1 year, especially within the first 3 months of abstinence.<sup>[1,2]</sup> Similar, if not greater, rates are seen in opioid dependence.<sup>[1,3]</sup> More recently, it has been estimated that 26–36 million people worldwide abuse opiates.<sup>[4]</sup> In addition, studies have reported alarming rates of relapse with opiate addiction compared to other drugs, with one study reporting a relapse rate of up to 91% in opiate addicts, indicating that the risk for relapse could be higher for opiate addiction than it is for other drug addiction.<sup>[5]</sup> Thus, understanding the mechanism of relapse is crucial for developing effective relapse prevention strategies.

Relapse is a multifactorial phenomenon with causes being individual patient characteristics, the drug, and environmental reinforcers.<sup>[2]</sup> Although there are many definitions of relapse, it is generally considered as a return to previous pattern of substance use. Marlatt considered factors contributing to relapse to be intrapsychic, interpersonal, and proposed the socio-cognitive-behavioral model.<sup>[6]</sup> His research found negative mood states, external pressures, and lessened cognitive vigilance as high risk situations for first use of substance (lapse) and subsequent relapse. Good self-efficacy enables the individual to cope with such high risk situations and thereby maintain abstinence.<sup>[7]</sup> The resulting relapse prevention model, which was first implemented three decades back, has been the backbone of addictions theory, research, and practice.<sup>[8]</sup>

In addition to the established biopsychosocial model for relapse prevention, recent research has emphasized a gene-environment relationship along with an interaction of biological factors and psychosocial factors making the individual susceptible to relapse.<sup>[9,10]</sup> Furthermore, craving, self-efficacy, family support, and affect are among known relapse-related psychosocial factors.<sup>[11]</sup> Craving is a multidimensional concept and has been defined in behavioral, reinforcement, and cognitive processing terms. It is often measured subjectively and generally regarded as a desire to use a drug.<sup>[12]</sup> Self-efficacy is the perceived ability of the individual to be able to resist the substance. It is affected by various cognitive processes and is influenced by the experience of substance use in coping to a high-risk situation.<sup>[13]</sup>

Although there has been ample research in relapse of alcohol dependence, there are few studies regarding relapse of opioid dependence.<sup>[14]</sup> Although in India, the prevalence of opioid dependence is lesser than that of alcohol, they are more likely to seek treatment as

compared to alcohol. Hence, we decided to undertake the study to compare the correlates of relapse in alcohol and opioid dependence. The primary goal of this study was to compare the correlates of relapse in alcohol dependence and opioid dependence while assessing reasons for relapse in both the groups. The study also compared negative affect, craving, self-efficacy, and perceived expressed emotions between the alcohol-dependent participants versus the opioid-dependent ones.

## METHODOLOGY

This research used a cross-sectional comparative study design with a sample size of 60 drawn from the study population of patients clinically diagnosed either as alcohol dependence ( $n = 30$ ) or opioid dependence ( $n = 30$ ) and seeking treatment for relapse. The response rate was 98.5%, with Group A including alcohol-dependence patients and Group B including patients with opioid dependence. The study was conducted at psychiatry outpatient department of deaddiction unit of a state government run tertiary general hospital psychiatric unit in Mumbai. Ethical approval for this study was obtained from the institutional ethics committee. Patients were explained the nature of the study and those who gave a valid informed consent were included in the study. They were assessed with a semistructured pro forma containing details of sociodemographic profile, details of substance use, scales, and questions pertaining to the aims of the study. The selected samples were between the ages 18–60 years and were patients who relapsed after receiving the diagnosis and treatment for alcohol dependence or opioid dependence. This group of patients could have had any comorbid substance use not accounting to dependence. However, comorbid previously diagnosed psychiatric illness, comorbid substance dependence except nicotine, or unwilling subjects were excluded from the study.

Four standardized instruments were used to collect data on craving, affect, self-efficacy, and expressed emotions.

1. Brief substance craving scale (BSCS), which includes a 14-item Likert-type scale devised by used to assess the craving experienced by the patient during the last 24 h of the substances<sup>[15]</sup>
2. Bradburn affect balance scale, a 10-item dichotomous scale devised by Bradburn<sup>[16]</sup> to assess the state of psychological well-being. It consists of two subscales, each measuring positive and negative affect, respectively
3. Drug avoidance self-efficacy scale (DASES), a 16-item Likert-type scale was used to assess the self-efficacy to resist the drug of use. Higher scores denote poorer self-efficacy<sup>[17]</sup>

4. Family emotional involvement and criticism scale (FEICS) was used to assess perceived expressed emotions. It consists of two subscales of perceived criticism and emotional involvement consisting of a 14-item scale rated on a five-point Likert rating.<sup>[18]</sup>

### Statistical analysis

Data analyses were carried out using Statistical Package Social Sciences 17 software (SPSS, USA). Group differences for all categorical variables were evaluated using Chi-square or Fisher's exact probability test as applicable. Group differences in continuous variables were evaluated with student's unpaired Welch's *t*-test. Correlations were carried out with Pearson's rank correlation coefficient and multiple regression analysis. The significance level for two-tailed *P* values was set at 0.05.

## RESULTS

The mean age was  $41.066 \pm 7.98$  years (alcohol dependence) and  $37.8 \pm 12.16$  years (opioid dependence). Only 13.33% of alcohol-dependent patients were unmarried as compared to 66.67% of the opioid group ( $P = 0.0204$ ). Majority of patients in both the groups had completed twelfth grade. The group differences in age, education, and family type were not statistically significant. All the subjects in our study were males. We relied on retrospective reports of details of substance use from the patient and family member.

There were no significant differences in the groups in the age of onset for substance use, duration of illness, frequency of hospitalization, or time to relapse. The age at dependence was significantly earlier in the group using opioids ( $P = 0.015$ ). Although the frequencies of relapses and medical help sought were more in

the opioid-dependence group, it was not statistically significant. Results showed significant differences in marital, socioeconomic, and employment statuses in the two groups. Detailed sociodemographic profile of the sample is presented in Table 1.

In the comparison of substance use history, the difference between the two groups in the number of times patients abstained from alcohol or opioid was found to lean toward statistical significance ( $P = 0.055$ ). There were no significant differences in the duration of illness, number of times relapsed or hospitalized, duration of abstinence, or medical help sought [Table 2].

When the groups were compared for factors associated with relapse (craving, self-efficacy, and affect), opioid-dependence patients scored significantly higher on craving (BSCS;  $P = 0.0002$ ,  $t = 3.97$ ), perceived criticism ( $P = 0.0001$ ,  $t = 4.7$ ), and lower on self-efficacy (DASES;  $P = 0.016$ ,  $t = 2.46$ ) [Table 3]. Although the opioid group had higher scores on negative affect of the affect balance scale, it did not achieve statistical significance ( $P = 0.073$  ns,  $t = 1.837$ ). No significant differences were found on the emotional involvement subscale in both the groups. Furthermore, there was no significant difference in family history of substance use in both the groups [Table 3].

Opioid patients were more likely to have a past ( $P < 0.0001$ ) or current other substance use ( $P = 0.0105$ ). The opioid group was more likely to have a criminal record ( $P = 0.025$ ). No differences were seen in family history of substance use disorders in both the groups ( $P = 0.094$ ).

Most subjects cited two or more causes for relapse. Most common reasons cited for relapse in both the groups

**Table 1: Sociodemographic profile of both groups**

	Alcohol dependence (n=30), n (%)	Opioid dependence (n=30), n (%)	P	$\chi^2$
Education				
Graduate	4 (13.33)	3 (10)	0.309 (NS)	2.343 <sup>a</sup>
Upto XII	24 (80)	21 (70)		
Primary	2 (6.66)	6 (20)		
Occupation				
Employed	20 (66.66)	11 (36.66)	0.037*	0.526 <sup>b</sup>
Unemployed	10 (33.33)	19 (63.33)		
Socioeconomic status				
Middle	15 (50)	5 (16.66)	0.012*	3 <sup>a</sup>
Lower	15 (50)	25 (83.33)		
Marital status				
Single	4 (13.33)	13 (43.33)	0.02*	0.307 <sup>a</sup>
Ever married	26 (76.66)	17 (56.66)		
Family type				
Nuclear	18 (60)	19 (63.33)	0.95 (NS)	0.09 <sup>b</sup>
Joint/extended	12 (40)	11 (36.66)		

\*Significant ( $P < 0.05$ ); <sup>a</sup>Fischer's exact test has been used; <sup>b</sup>Chi-square test was used. NS – Not significant

**Table 2: Substance use history in both the groups**

<i>n</i> =30 in each group	Mean±SD		<i>t</i>	<i>P</i>
	Alcohol dependence	Opioid dependence		
Duration of illness (years)	19.033±9.174	1.066±16.166	11.531	0.291 (NS)
Number of times relapsed	5.0±4.646	0.330±5.366	3.709	0.736 (NS)
Number of times hospitalized	1.133±1.795	1.409±1.966	2.697	0.165 (NS)
Duration of abstinence	229±723.43	0.521±315.5	548.64	0.603 (NS)
Number of times abstained	5.43±5.386	0.055±5.366	3.7	0.955 (NS)
Medical help sought	1.8±2.124	1.817±3.266	3.877	0.076 (NS)

Statistics done using unpaired *t*-test. NS – Not significant; SD – Standard deviation

**Table 3: Additional substance use history in both groups**

	Group A Alcohol dependence ( <i>n</i> =30)		Group B Opioid dependence ( <i>n</i> =30)		Significance ( <i>P</i> , <i>rr</i> )
	Yes, <i>n</i> (%)	No, <i>n</i> (%)	Yes, <i>n</i> (%)	No, <i>n</i> (%)	
Family history of substance use	13 (43.33)	17 (56.66)	6 (20)	24 (80)	0.09 (NS), 2.167
History of criminal record	1 (3.33)	29 (96.66)	8 (26.66)	22 (73.33)	0.025*, 0.125
Current other substance use	0	30 (100)	7 (23.33)	23 (76.66)	0.0105*, 1.304
Other substance use in past	1 (3.33)	29 (96.66)	25 (83.33)	5 (16.66)	0.0001*, 5.8

\*Significant *P*≤0.05. Statistics by Fishers exact test. NS – Not significant

was desire for positive mood [Table 4], followed by sleep difficulties and negative affect in alcohol dependence and craving and sleep difficulties in opioid dependence. Emotional state contributed to a relapse precipitant in 76%–80% of the subjects in both the groups.

When BSCS, ABS, FEICS, and DASES were correlated with each other [Table 5], negative affect was seen to be positively correlated with craving and perceived criticism, whereas the same affect was negatively correlated with self-efficacy in both the groups [Table 6]. On multiple regression analyses, differential correlates of negative affect emerged in both the groups. Perceived criticism (0.0046) and craving (*P* = 0.014) were significantly associated with negative affect in the alcohol group. Self-efficacy was the only significant correlate of negative affect (*P* = 0.025) in the opioid group [Table 7].

## DISCUSSION

Lower socioeconomic status may predispose to substance use or be a consequence of social maladjustment due to early onset of dependence. Unemployment coupled with financial problems are known to predispose to relapse.<sup>[19]</sup> The high cost of acquiring opioids further worsens the situation. Lack of a stable income coupled with financial crunch for acquiring the substance is associated with substance-related criminality.<sup>[20]</sup> In addition, the cost of acquiring opioid for chronic use is higher than that of alcohol. Similar findings were seen in our study with opioid group subjects having a significantly higher likelihood of criminal record as compared to alcohol group.

The earlier age at development of a dependence pattern was significantly earlier in the opioid group

**Table 4: Reasons cited for current relapse in both groups**

	Group A ( <i>n</i> =30), <i>n</i> (%)	Group B ( <i>n</i> =30), <i>n</i> (%)
Negative mood state	6 (20)	1 (3.33)
Desire for positive mood state	17 (56.66)	23 (76.66)
Social/family problems	4 (13.33)	4 (13.33)
External pressure to use	1 (0.03)	5 (16.66)
Environmental cues/others	0	3 (10)
Sleep problems	9 (30)	7 (23.33)
Craving/urge	4 (13.33)	9 (30)
Concentration difficulties	3 (10)	3 (10)

**Table 5: Comparison of craving, affect, self-efficacy and family support in both groups**

Scale	Mean±SD		<i>t</i>	<i>P</i>
	Group A ( <i>n</i> =30)	Group B ( <i>n</i> =30)		
BSCS	5.166±4.371	9.4±3.847	3.978	0.0002*
ABS-negative affect	2.133±0.972	2.633±1.129	1.837	0.073 (NS)
DASES	53.4±19.685	67.2±23.567	2.46	0.0168*
PC	10.666±6.149	17.466±6.673	4.104	0.0001*
EI	19.133±7.722	17.733±7.083	0.731	0.731 (NS)

\*Significant *P*<0.05. Statistics using unpaired *t*-test. NS – Not significant; BSCS – Brief Substance Craving Scale; DASES – Drug Avoidance Self-Efficacy Scale; SD – Standard deviation; ABS – Affect Balance Scale; PC – Perceived criticism; EI – Emotional involvement

is consistent with other studies in the literature<sup>[21]</sup> and is potentially attributable to the highly addictive properties of opioid. Alcohol dependence is slow to develop. Researchers have found that the later development of dependence pattern in alcohol use probably allows time for the subjects to complete their education, be employed, and get married.<sup>[22]</sup> Similar findings were seen in our study with the alcohol group being more likely to be ever married and be employed as compared to the opioid group.

**Table 6: Correlation of various measures in both groups**

	Alcohol dependence (n=30)					Opioid dependence (n=30)				
	BSCS	ABS-negative affect	DASES	PC	EI	BSCS	ABS-negative affect	DASES	PC	EI
BSCS	-	0.53	0.359	0.178	-0.204	-	0.368	0.243	0.297	0.055
ABS-negative affect	0.529	-	0.504	0.567	0.347	0.368	-	0.499	0.413	-0.18
DASES	0.359	-0.011	-	0.312	-0.183	0.243	0.499	-	0.25	-0.323
PC	-0.178	0.567	0.312	-	-0.639	0.297	0.413	0.25	-	-0.113
EI	-0.204	-0.347	-0.183	-0.639	-	0.055	-0.18	-0.323	-0.113	-

BSCS – Brief Substance Craving Scale; ABS – Affect Balance Scale; DASES – Drug Avoidance Self-Efficacy Scale; PC – Perceived criticism; EI – Emotional involvement

**Table 7: Multiple regression analyses of negative affect**

	DASES	PC	BSCS
Alcohol dependence (n=30)			
$r^2$	0.192	0.102	0.133
$F$	1.24	1.11	1.151
$P$	0.11 (NS)	0.0046*	0.014*
Opioid dependence (n=30)			
$r^2$	0.093	0.122	0.118
$F$	1.10	1.14	1.13
$P$	0.025*	0.133 (NS)	0.242 (NS)

\*Significant  $P < 0.05$ . NS – Not significant; BSCS – Brief Substance Craving Scale; DASES – Drug Avoidance Self-Efficacy Scale; PC – Perceived criticism

The duration of illness in the alcohol group was marginally higher than the opioid group and no statistically significant difference seen in our study. This is not in keeping with other studies which have found a longer duration of illness in alcohol dependence.<sup>[23]</sup> Longer duration of illness at presentation in alcohol use disorders is due to later development of social and occupational dysfunction as compared to opioid. Higher cognitive and family dysfunction have been found in opioid dependence as compared to alcohol dependence.<sup>[24]</sup>

No significant differences in number of relapses and hospitalizations or duration of last abstinence in the both the groups were seen in our study. This is in keeping with findings of previous studies that found similar outcomes in both the groups.<sup>[25]</sup> Although the number of times medical help was sought was higher in opioid group, it did not achieve statistical significance. The greater family dysfunction, high cost of drugs, criminality, and social dysfunction may have led the subjects of opioid dependence to seek medical help.<sup>[26]</sup> About 23.33% of opioid group sample were using other substances during the time of the study, whereas 83.33% reported using other substances in the past. This was in stark contrast to only one subject in alcohol group ever used any other substance in the past. Impulsivity, novelty seeking, past gateway drug use, or temporary switch to a cheaper drug are possible reasons of high prevalence of other substance use in opioid group.<sup>[27]</sup>

This study also assessed the reasons cited for relapse such as positive expectancies about the effects of the drug experienced by users as fun and sensation seeking that are known to precipitate a relapse.<sup>[28]</sup> Negative affect was reported by 20% and 3.33% of alcohol and opioid groups, respectively. This is not in keeping with previous research which found unpleasant negative effects such as anger, frustration, sadness, and boredom being the most common cause of relapse.<sup>[29]</sup> Researchers have found interpersonal conflicts and external pressure to use. Sleep difficulties were quoted by 30% and 23.33% of alcohol and opioid groups, respectively, in our sample. Sleep problems have been reported by researchers as causes of relapse. However, decreased cognitive vigilances such as concentration difficulties were reported in a small proportion of our study sample (10% of both the groups).<sup>[30]</sup>

When both the groups were compared for craving on the BSCS, opioid group had significantly greater scores of craving. Opioid is a highly addicting drug and could lead to high craving. Researchers have found the heroin users who use other substances as well are likely to have higher craving to which they cope poorly and more often justify the craving. Three-fourths of the sample in opioid group in our study had ever used another substance and this could explain higher craving seen in them.<sup>[31]</sup>

Interestingly, the precipitants of first use of substance following abstinence are similar to those in a full-blown relapse and the conversion of lapse to relapse is very quick.<sup>[32]</sup> Hence, relapse prevention strategies need to target such high-risk situations such as emotional states, urge to use, and external pressure to use and empower them to cope with such situations with better self-efficacy. Relapse prevention strategies need to strengthen family support systems and tackle the expressed emotions of the family members. Psychoeducation for better dialog of patients with their family members needs to be encouraged to resolve interpersonal conflicts. Relapse prevention strategies need to be dynamic and multipronged to alleviate the negative affect, enhance their coping skills, and strengthen their self-efficacy. Measures to cope with

high-risk situations and drug-related cues are essential for preventing relapse.<sup>[33]</sup>

Limitations of the study include a sample consisting of all men selected from an urban metropolis was not representative of all demographics. The study was conducted in a deaddiction unit among patients seeking treatment, and hence is not representative of all alcohol and opioid users. A longitudinal study may do more justice to a dynamic process such as relapse. Finally, no biological factors were studied in relation to relapse and the sample size was small.

## CONCLUSION

Disparity in sociodemographic factors was seen in both the groups with opioid group being more likely to be single, unemployed, belonging to lower socioeconomic status, and having a criminal record. Higher likelihood of criminal record in opioid users could also be contributed to personality factors and childhood conduct disorder which was not a part of our study. Such disparities indicate that social determinants play a critical role in substance use and should be addressed alongside physical and psychological determinants. Differences were seen in substance use history with opioid group having an earlier age of development of dependence pattern and past/current history of other substance use. Negative affect correlated positively with craving and perceived criticism from the family and negatively correlated with self-efficacy in both the groups. The study findings echo the literature that describes relapse as a complex multifactorial phenomenon. Although there were differences in presentation, similar pathways and mechanisms of relapse were seen in alcohol and opioid dependence, albeit with some differences.

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### Conflicts of interest

There are no conflicts of interest.

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